

**NYCDEP Responses to USEPA Follow up Questions on LTCP Costs
12-8-17**

- 1) Can NYCDEP confirm that the “Committed Costs” in Table A and B only include capital costs? If so, can NYCDEP provide estimates on the O&M costs for the rest of the projects identified?**

Yes. Table A and B summarize Capital Commitments. See updated Table A and B attached. As stated in our previous response, DEP doesn't track O&M costs by project but uses an overall O&M cost per Bureau as many of the assets are maintained by the same staff and requirements contracts. Costs for land acquisition were estimated based on property costs in New York City.

- 2) On page 6 “In addition, the City’s MS4 Permit requires development and implementation of a monitoring and assessment program plan to assess compliance with the permit. DEP is currently developing the monitoring and assessment plan (MAP) under the MS4 Stormwater Management Plan. Costs range from \$400,000 for FY18 and FY19 and will scale up to \$7.5 million to be spent between FY20 and FY25.” Are these costs only for monitoring compliance with the NYCDEP MS4 permit? Are there any capital costs associated with stormwater management as required by the MS4 permit?**

The MS4 costs presented previously from \$400,000 to \$7.5million are associated with monitoring compliance costs only. As discussed in the Newtown Creek LTCP Section 9, DEC issued a citywide MS4 permit to NYC for all City agencies, effective August 1, 2015, that covers NYC's municipal separate stormwater system.

DEP has not yet fully developed estimated costs for permit compliance and will be conducting some assessments to determine capital costs related to some provisions. Some of these initial assessments are underway and included in DEP's expense budget: development of a New York City MS4 Stormwater Management Plan (\$7.8 million), assessment of pollution prevention and good housekeeping for municipal facilities (~\$3 million), floatables control (\$600,000), assessments on industrial and commercial properties (\$12.8 million), and drainage assets on highway arterials (\$11.5 million). One capital contract (\$9.4 million) is currently underway for design and construction management services for green infrastructure pilot design, water quality and cloudburst management projects.

The full MS4 permit compliance costs are yet to be estimated. DEP's annual historic stormwater capital and O&M costs have averaged \$131.6M. However, given the new and more stringent requirements in the MS4 permit, future MS4 compliance costs are anticipated to be significantly higher than DEP's current stormwater program costs. The future compliance costs will also be shared by other NYC agencies that are responsible for managing stormwater and implementing MS4 programs. The projected cost for

stormwater and CSO programs in other major urban areas such as Philadelphia and Washington, D.C. are \$2.4B and \$2.6B, respectively. According to preliminary estimates completed by Washington District Department of Environment, the MS4 cost could be \$7B (green build-out scenario) or as high as \$10B (traditional infrastructure) to meet the TMDLs. Philadelphia's FY2016 Stormwater Management Program budget was \$99.5M (MS4 Permit Annual Report, 2016). Washington D.C. reported total MS4 expenditures of \$11.7M in 2016 and a budget of \$26.7M for FY17 (MS4 Permit Annual Report, 2017).

Existing data for estimating future NYC MS4 compliance costs is limited. Based on estimates from other cities, stormwater retrofit costs are estimated between \$25,000 and \$35,000 per impervious acre on the low end, to between \$100,000 and \$150,000 on the high end. Costs would vary based on the type and level of control selected. For estimating purposes, a stormwater retrofit cost of \$35,000 per impervious acre was assumed, which results in estimated MS4 compliance costs of about \$2B for NYC.

3) Can NYCDEP provide project start dates for the projects identified in Table A and Table B?

The projected construction dates for Table A have been included as an attachment and the construction completion dates for the projects included on Table B in which the majority of the funding has already been encumbered. Some corrections and refinements have also been made to the costs and total CSO volumes based on latest modeling efforts and cost estimates. See tables attached.

4) Can NYCDEP provide the term and interest rate for the bonds that will be required to finance the projects identified? If NYCDEP can't provide the exact values can NYCDEP provide the term and interest rates typical for projects of these sizes?

For the purpose of this analysis we assumed 32 year bonds with 4.75% interest rate. While the system's long-term borrowing costs have historically varied, in line with fluctuations in market interest rates, 4.75% is a reasonable estimate of the system's long-term cost of debt, for purposes of analyzing the identified projects. It is possible that due to changes in market interest rates, or to changes in Federal tax law, that actual long-term borrowing costs could be different from this estimate. The system's long-term debt issues have historically had average lives ranging from 30 – 36 years; accordingly, we believe that 32 years is a reasonable assumption for an analysis of the life of the system's long-term debt.

5) Can NYCDEP provide the year(s) that were used to estimate the costs in Table A and B? If these estimated costs were not based on 2018 dollars, does NYCDEP have the cost estimates for these projects adjusted to 2018 dollars, and can you provide these cost estimates to EPA?

The costs on Table “B” are for historical expenses and all costs are based on the year in which these funds were committed/encumbered and they have not been escalated to 2018 dollars. The future LTCP costs on Table “A” have been escalated out to the mid-point of construction using an escalation factor of 3.25% and mid-point of construction dates provided. These costs have been committed in the 10 year capital plan and reflect DEP’s best estimate as to the project costs when these funds will need to be encumbered.

6) Can NYCDEP provide us with a table similar to the Table A (for the preferred alternatives), except for the projects and costs associated with 100% CSO control?

A Table “C” has been included that provides preliminary costs and schedules for the 100% CSO Control scenarios. Please note these are extremely preliminary as there has been no detailed constructability analysis or engineering analysis to advance these alternatives, as they were deemed not cost effective and/or not warranted under the CSO LTCP alternative evaluation and water quality attainment analysis.

Table A - LTCP CSO Program Costs

12/8/2017

Waterbody	Projects	Escalated Capital Project Costs (Design, CM, Construction) ⁶				Land Acquisition			CSO Reductions (Including Treated Volumes)						Construction Periods		
		Encumbered Cost (\$M)	Committed Costs (\$M) for FY18-FY27	Projected Costs (\$M) for FY28-FY37	Total Cost (\$M)	# Sites	Total Area (Acres)	Estimated Cost (\$M) ⁴	Baseline LTCP CSO Volume (MGY) ¹	LTCP Recommended Plan (MGY) ²	CSO Reduction (MGY) ³	CSO Volume Reduction (%)	CSO Bacteria Reduction (%)	Treated CSO Volume (MGY)	Construction NTP	Construction Completion	Midpoint of Construction
Alley Creek	Seasonal Disinfection @ CSO Retention Facility	\$2	\$11	\$0	\$13				132	132	0	0%	59%	78	2022	2024	2023
Bergen & Thurston Basins	TBD	\$0	TBD	TBD	TBD				Included with Jamaica Bay	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Bronx River	New Regulator and Floatables Control at HP-011 + Hydraulic Relief at Outfalls HP-007/-009	\$0	\$146	\$39	\$185				455	306	149	33%	33%	---	2023	2026	2025
Coney Island Creek	No Additional Projects	\$0	\$0	\$0	TBD				75	75	0	0%	0%	---	-	-	-
Flushing Bay	25 MG CSO Storage Tunnel (Outfalls BB-006 and BB-008)	\$0	- ⁵	\$1,241	\$1,241	1	4.5	\$180	1,453	706	747	51%	51%	---	2026	2035	2031
Flushing Creek	Floatables Control (Baffles) at Diversion Chamber 3 (Outfall TI-010) and Regulator TI-09 (Outfall TI-011)	\$8	\$38	\$0	\$46	2	1.5	\$60	1,201	1,201	0	0%	51%	584	2023	2025	2024
Gowanus Canal	8 MG Tank at RH-034 and 4 MG Tank at OH-007	\$79	\$735	\$120	\$934	2	2.5	\$100	263	115	148	56%	56%	---	2020	2028	2024
Hutchinson River	Diversion Structure with Floatables Control at HP 024	\$0	\$112	\$55	\$167	1	0.25	\$10	323	323	0	0%	14%	65	2026	2030	2028
Jamaica Bay and Tribs	TBD	\$0	TBD	\$0	TBD				1,536	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Paerdegat Basin	TBD	\$0	TBD	TBD	TBD				616	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Newtown Creek	26 MGD BAPS Expansion and 39 MG Deep Tunnel	\$0	- ⁵	\$1,053	\$1,053	1	3.5	\$140	1,146	455	691	60%	60%	---	2026	2029	2027.5
Open Waters	TBD	\$0	TBD	TBD	TBD				12,207	TBD	TBD	TBD	TBD	TBD	2030	2042	2036
Westchester Creek	No Additional Projects	\$0	\$0	\$0	\$0				290	290	0	0%	0%	---	TBD	TBD	TBD
Total		\$89	\$1,780	\$2,508	\$4,377	7	12.25	\$490	19,697						-	-	-

(1)

Baseline CSO LTCP estimates annual overflow volume that is based on plants operating at permitted wet weather capacities, all committed grey and green infrastructure online, 2008 JFK rainfall data (~46" of rainfall), and updated CY2040 projected flows and loads.

(2)

LTCP Recommended Plan estimates annual overflow volume that is based on plants operating at permitted wet weather capacities, all committed grey and green infrastructure online, 2008 JFK rainfall data (~46" of rainfall), and updated CY2040 projected flows and loads. Please note that estimated volumes for the recommended CSO plan only includes costs and CSO reductions for LTCPs submitted to date; both the Open Waters and Jamaica Bay LTCPs are still being developed therefore no costs or CSO reductions are included for these waterbodies

(3)

The approved CSO LTCPs for Alley Creek, Hutchinson River and Flushing Creek recommend recreational season disinfection (May thru October); therefore there is no CSO reduction but a significant reduction in bacterial loading. For Alley Creek 100% of the overflow during the recreational season is treated and approximately 50%-60% of the overflows from Hutchinson River and Flushing Creek are disinfected during the recreational season.

(4)

The land acquisition costs are extrapolated based on recent negotiations in Gowanus Canal in which 2.5 acres is projected to cost about \$100 million.

(5)

FY18 Executive Ten Year Plan for FY18-FY27 has \$1.78 billion budgeted for LTCP. \$738 million is yet to be allocated by waterbody.

(6)

All costs associated with the CSO LTCP and CIP have been escalated out to mid point of construction using an escalation rate of 3.25% per year.

Table B - Committed Existing CSO Program Costs

12/8/2017

Waterbody	Projects	Total Project Costs (Design, CM, Construction, O&M)				CSO Reductions				Completion Date
		Encumbered Cost (\$M)	Committed Costs (\$M)	Total Cost (\$M)	O&M Cost (\$M/Yr)	Pre-WWFP CSO Volume (MGY) ¹	Baseline LTCP CSO Volume (MGY) ²	CSO Reduction (MGY)	CSO Volume Reduction (%)	
Alley Creek	CSO Retention Facility	\$139	\$0	\$139	\$0.4	517	132	385	74%	2011
Bergen & Thurston Basins	Warnerville Pumping Station and Force Main + Bending Weirs + Parallel Interceptor + Lateral Sewer	\$42	\$12	\$54		Included with Jamaica Bay	Included with Jamaica Bay	Included with Jamaica Bay	Included with Jamaica Bay	Included with Jamaica Bay
Bronx River	Maximize Flow to HP WWTP + Floatables Control	\$46	\$0	\$46		1,007	455	552	55%	2012
Coney Island Creek	Avenue V PS Expansion + Wet Weather Force Main	\$197	\$0	\$197		293	75	218	74%	2014
East River Open Waters	Bowery Bay Headworks + Port Richmond Throttling Facility + Tallman Island Conveyance + Outer Harbor CSO Regulator Improvements	\$196	\$0	\$196		16,165	12,207	3,958	24%	Completed
Flushing Bay	Regulator Modifications to High Level Interceptor + Low Lying Diversion Sewer + Environmental Dredging	\$69	\$0	\$69		2,328	1,453	875	38%	Ongoing
Flushing Creek	CSO Retention Facility + Vortex Facilities	\$363	\$0	\$363	\$2.3	2,413	1,201	1,212	50%	2007
Gowanus Canal	Gowanus PS Reconstruction + Flushing Tunnel	\$194	\$0	\$194		377	263	114	30%	2014
Hutchinson River	Hunts Point WWTP Headworks	\$3	\$0	\$3		390	323	67	17%	Completed
Jamaica Bay & Tribs	Sewer Improvements in 26W + 26W HLSS + Hendrix Creek Canal Dredging + Shellbank Destratification + Spring Creek AWCP Upgrade + 26 Ward Wet Weather Improvements	\$512	\$65	\$577	\$1.6	2,185	1,536	649	30%	Ongoing
Newtown Creek	Floatables Control + Bending Weirs + Plant Expansion + Instream Aeration	\$228	\$31	\$259		1,470	1,146	324	22%	2013
Paerdegat Basin	CSO Retention Facility	\$394	\$0	\$394	\$5.0	1,388	616	772	56%	2011
Westchester Creek	Weir Modifications + Pugsley Creek Parallel Sewer	\$124	\$0	\$124		767	290	477	62%	Ongoing
Green Infrastructure Program	Citywide GI Program ³	\$467	\$1,033	\$1,500	\$12.8	---	---	---	---	Ongoing
Total Cost		\$2,974	\$1,141	\$4,115	\$22.1	29,300	19,697	9,603	33%	

(1)

Pre WWFP is pre Waterbody Watershed Facility Plan estimates annual overflow volume that is based on 2003 wastewater treatment plant wet weather capacities, existing infrastructure in 2003, 1988 JFK rainfall data (~40" of rainfall), and CY2045 projected flows and loads.

(2)

Baseline CSO LTCP estimates annual overflow volume that is based on plants operating at permitted wet weather capacities, all committed grey and green infrastructure online, 2008 JFK rainfall data (~46" of rainfall), and updated CY2040 projected flows and loads.

(3)

The Citywide GI program committed costs are out to CY2030, the current 10 year capital improvement plan goes from FY2018 to FY2027 and is funded for approximately \$977 million. The existing projected O&M costs for encumbered GI is about \$4M with a projected cost of about \$15M associated with the full GI buildout.

Table C - LTCP CSO Program Cost Breakdown for 100% CSO Control

12/8/2017

Waterbody	Baseline CSO Volumes	% Total CSO Volume	Construction NTP ⁴	Construction Completion ⁴	Midpoint of Construction	100% CSO Control Escalated Construction Costs (\$B) ^{1,2,3,4}
Alley Creek	132	0.7%	2025	2035	2030	\$1.6
Bergen & Thurston Basins	Included with Jamaica Bay	Included with Jamaica Bay	Included with Jamaica Bay	Included with Jamaica Bay	Included with Jamaica Bay	Included with Jamaica Bay
Bronx River	455	2.3%	2025	2035	2030	\$2.0
Coney Island Creek	75	0.4%	2025	2035	2030	\$0.6
Flushing Bay	1453	7.4%	2025	2040	2033	\$9.8
Flushing Creek	1201	6.1%	2025	2040	2033	\$5.0
Gowanus Canal	263	1.3%	2025	2035	2030	\$2.4
Hutchinson River	323	1.6%	2025	2035	2030	\$2.3
Jamaica Bay and Tribs	1536	7.8%	2025	2040	2033	\$8.3
Paerdegat Basin	616	3.1%				
Newtown Creek BAPS	1146	5.8%	2025	2045	2035	\$4.6
Newtown Creek Tunnel						
Citywide/Open Waters	12207	62.0%	2030	2050	2040	\$162.9
Westchester Creek	290	1.5%	2025	2035	2030	\$2.1
Total	19,697	100%				\$201.5

(1) Construction Costs are escalated at 3.25% a year.
(2) Design and DSDC Costs were assumed to be 16% and Construction Management (CM) Costs were assumed to be 10% of Construction Costs.
(3) The costs for land acquisition have not been included.
(4) These are extremely preliminary costs and schedules, no detailed engineering analysis was performed to determine if these projects are constructible.
(5) The 100% CSO Control costs for the Citywide/Open Waters, Gowanus Canal, and Jamaica Bay were based on the Waterbody Watershed Facility Plans and all other costs were based on submitted CSO LTCPs and were escalated out to mid point of construction.